

C L A I M S

1. An image processing method using a computer,
comprising:

5 extracting vertex coordinates of a triangular-
shaped polygon;

setting a region surrounding the triangular-shaped
polygon on the basis of the vertex coordinates;

measuring a distance from a lattice point included
in the region to the triangular-shaped polygon; and

10 drawing a graphic figure on the basis of the
distance from the lattice point to the triangular-
shaped polygon.

2. The method according to claim 1, wherein the
graphic figure is drawn as a set of points at which
15 the distance to the triangular-shaped polygon is zero.

3. The method according to claim 1, wherein the
distance from the lattice point to the triangular-
shaped polygon is given as data which is accompanied
with a sign indicative of whether the lattice point
20 is outside or inside the graphic figure drawn by the
polygon.

4. The method according to claim 1, further
comprising converting all of a plurality of polygons
that form the graphic figure into triangular-shaped
25 polygons, prior to the step of extracting the vertex
coordinates of the triangular-shaped polygon.

5. The method according to claim 1, further

comprising:

dividing a drawing region of the graphic figure, which is drawn by the triangular-shaped polygon, into a plurality of meshes; and

5 further dividing the mesh, in which an outline of the graphic figure is present, into a plurality of meshes,

wherein said region is set for each of the meshes.

6. The method according to claim 2, wherein a
10 surface of the graphic figure is drawn by transforming a parametric representation using the polygon to an implicit-function representation.

7. A computer program product for processing image data, comprising:

15 means for instructing a computer to extract vertex coordinates of a triangular-shaped polygon;

means for instructing the computer to generate a region surrounding the triangular-shaped polygon on the basis of the vertex coordinates;

20 means for instructing the computer to measure a distance from a lattice point included in the region to the triangular-shaped polygon; and

means for instructing the computer to draw a graphic figure on the basis of the distance from the
25 lattice point to the triangular-shaped polygon.

8. The product according to claim 7, wherein said means for instructing the computer to draw the graphic

figure is configured such that the graphic figure is drawn as a set of points at which the distance to the triangular-shaped polygon, which is measured by said means for instructing the computer to measure the
5 distance, is zero.

9. The product according to claim 7, wherein said means for instructing the computer to measure the distance is configured such that the distance from the lattice point to the triangular-shaped polygon is given
10 as data which is accompanied with a sign indicative of whether the lattice point is outside or inside the graphic figure drawn by the polygon.

10. The product according to claim 7, further comprising a means for instructing the computer to
15 convert all of a plurality of polygons which form the graphic figure into triangular-shaped polygons, before the vertex coordinates of the triangular-shaped polygon are extracted by the means for instructing the computer to extract the vertex coordinates of the triangular-
20 shaped polygon.

11. The product according to claim 7, further comprising:

means for instructing the computer to divide an image region including the graphic figure, which is
25 represented by the triangular-shaped polygon, into a plurality of meshes; and

means for instructing the computer to further

divide the mesh, in which an outline of the graphic figure is present, into a plurality of meshes,

wherein the means for instructing the computer to generate the region is configured such that the region
5 is set for each of the meshes.

12. The product according to claim 8, wherein a surface of the graphic figure, which is drawn by the means for instructing the computer to draw the graphic figure, is drawn by transforming a parametric representation using the polygon to an implicit-function
10 representation.

13. An image processing apparatus comprising:
an input unit configured to receive polygon data;
a processing unit configured to generate a region
15 surrounding an individual polygon, which is represented by the polygon data, measure a distance from a lattice point included in the region to the polygon, and draw a graphic figure on the basis of the measured distance by an implicit-function representation; and
20 an outputting unit configured to display the graphic figure that is obtained by the implicit-function representation.

14. The apparatus according to claim 13, wherein the processing unit draws the graphic figure as a set
25 of points at which the distance to the polygon is zero.

15. The apparatus according to claim 13, wherein the processing unit provides the distance from the

lattice point to the polygon as data which is accompanied with a sign indicative of whether the lattice point is outside or inside the graphic figure that is drawn by the polygon.

5 16. The apparatus according to claim 13, wherein the processing unit converts all of the polygons into triangular-shaped polygons, extracts vertex coordinates of the triangular-shaped polygon, and generates the region based on the vertex coordinates.

10 17. The apparatus according to claim 13, wherein the processing unit divides an image region of the graphic figure, which is drawn by the polygon, into a plurality of meshes, further divides the mesh, in which an outline of the graphic figure is present, into a
15 plurality of meshes, and sets said region for each of the meshes.